GROW CONTROL
POWER TECH PVT. LTD.

We Provide Solutions....

AN ISO 9001:2015 COMPANY

TWT POWER SUPPLY

GROW CONTROL **Traveling Wave Tube (TWT) Power Supplies** are high-performance, precision-engineered solutions specifically designed to power **TWT amplifiers** used in radar, satellite communications, electronic warfare, and broadcasting systems. These power supplies provide stable, high-voltage DC power required for TWTs to amplify high-frequency signals with high gain and efficiency.

With over 30 years of expertise in power electronics and a commitment to **indigenous technology**, ***GROW CONTROL*** offers reliable, rugged TWT power supplies that meet the demanding performance and environmental standards required by defense and aerospace sectors.

GROW CONTROL **TWT Power Supplies** offer high-performance, reliable power solutions for critical applications in radar, satellite communication, electronic warfare, and broadcasting systems. Leveraging **indigenous technology** and years of expertise, these power supplies deliver stable, high-voltage power with precision, durability, and efficiency.

Features

- **High Voltage Output**: Capable of delivering output voltages from 1kV to 20kV, supporting a wide range of TWT amplifiers.
- **Wide Power Range**: Output power ranging from 100W to 10kW, enabling high-power amplification for applications in radar, satellite communication, and electronic warfare.
- **Stability and Precision**: Highly stable output with minimal ripple and noise, ensuring consistent TWT operation and signal integrity.
- **Advanced Protection Mechanisms**: Features comprehensive protection systems, including over-voltage, over-current, and thermal protection to safeguard the TWT and the power supply.
- **Rugged and Compact Design**: Engineered to meet shock, vibration, and temperature resistance, ensuring reliable operation in harsh environments.
- **Low Ripple & Noise**: Ultra-low ripple and noise, maintaining clean and stable power delivery, which is crucial for sensitive communication and radar systems.
- **Modular and Scalable**: Modular design enables easy integration into existing systems and supports scalability for high-power applications.

- **Remote Monitoring and Control**: Equipped with digital interfaces for real-time monitoring, fault detection, and remote control of voltage levels and operational parameters.
- **EMI/EMC Compliance**: Designed to comply with **EN 55022** standards, ensuring minimal electromagnetic interference in sensitive environments.

Key Advantages

1. **Indigenous Technology**:
2. Fully developed and manufactured in India, ***GROW CONTROL*** TWT power supplies offer high reliability, reduced lead times, and customized solutions tailored to domestic and defense needs.
3. **High Efficiency**:
   With up to 93% energy efficiency, the power supplies minimize energy loss and heat generation, reducing the need for extensive cooling and lowering operational costs.
4. **Precision Control**:
   Provides highly stable DC output with low ripple and noise, which is essential for maintaining the performance and longevity of the TWT amplifiers.
5. **Rugged Durability**:
   Designed to operate reliably in extreme environments, from high altitudes to temperature fluctuations, ensuring long-term performance in aerospace and military applications.
6. **Customizable Solutions**:
   GROW CONTROL offers customization in voltage levels, power ranges, form factors, and control interfaces to meet the unique requirements of specific applications.

Applications

1. **Radar Systems**:
   Delivers precise high-voltage power to TWT amplifiers used in radar systems, ensuring consistent performance and high-gain signal amplification.
2. **Satellite Communication**:

Powers TWTs in satellite uplinks, ensuring stable, high-power RF signal transmission over long distances for secure communication.

3. **Electronic Warfare**:
   Supports high-power TWTs in electronic warfare systems for jamming, signal intelligence, and countermeasures where pulse accuracy and reliability are critical.
4. **Broadcasting**:
   Provides reliable power for TWT amplifiers used in high-power television and radio broadcasting applications, ensuring signal strength and stability over large areas.
5. **Aerospace & Defense**:
   Powers TWTs in military and aerospace applications, including airborne radar and communication systems, offering rugged performance in extreme environmental conditions.

Customization Options

GROW CONTROL offers the following customization options to meet the unique requirements of defense, aerospace, communication, and industrial sectors:

- **Output Voltage & Power Adjustments**
- **Size and Form Factor Modifications**
- **Cooling Options (Air or Liquid)**
- **Advanced Protection Features**
- **Enhanced Monitoring and Control Interfaces**

Our engineering team works closely with clients to design tailored solutions for their specific operational and environmental needs.

Why Choose *GROW CONTROL*?

- **Indigenous Expertise**: With over three decades of experience in power electronics, ***GROW CONTROL*** offers robust and reliable TWT power supplies that meet the exacting standards of defense and aerospace industries.
- **Precision and Stability**: The power supplies provide stable, low-noise DC output to ensure the consistent performance of TWT amplifiers, vital for high-frequency, high-power applications.

- **Energy Efficient**: Designed for maximum energy efficiency, ***GROW CONTROL*** TWT power supplies reduce operational costs while delivering optimal power for continuous use.
- **Built for Tough Environments**: Compliant with military standards, these power supplies are engineered for reliable operation in extreme environmental conditions.
- **Customer Support**: ***GROW CONTROL*** provides complete support from design and customization to installation, integration, and maintenance, ensuring seamless operation and reliable performance.

Certifications

- **EN 55022** – EMI Compliance
- **ISO 9001:2015** – Quality Management Systems

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Technical Specification

Model No.		GC652VTWT	GC103VTWT	GC452VTWT	GC133VTWT
Input		230VAC ±10%, 50Hz	220V ±10%, 50Hz	415V ±10%, 50Hz	230V ±10%, 50Hz
Filament supply voltage	Heater voltage (V)	-1 to -10	-6.1 to -6.3	0 to -9V	0 to -10
	Heater current (A)	2A	2A	1.5	0 to 5
	Regulation (%)	±1	±2	1	1
	Ripple (V)	0.2	0.2	0.2	50mV
	Surge current (A)	3.5	5	3	10A
Cathode supply voltage	Cathode voltage (kV)	-3 to -6.5	-8 to -10	3 to 10	-3 to -13
	Helix current (mA)	50	50	15 to 30	50 to 500
	Beam current (mA)	100	100	100	100
	Regulation (%)	±1	±0.1		0.1
	Ripple (V)	<5	5	<5	5
	Droop (V/µs)	<2	2	<2	<2
Collector 1	Voltage (KV)	4 to 5	68 to 72% w.r.t cathode	30 to 50% w.r.t cathode	-2 to -11
	Current (mA)	300	60 mA to 150mA	100 mA to 200 mA	1.7
	Regulation (%)	±5	±5	±5	±5
	Ripple (V)	<50	<50	<50	<50

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Collector 2	Voltage (KV)	3 to 4	45 to 49% of cathode voltage	30 to 50% w.r.t cathode	-2 to -11
	Current (mA)	300	75 mA to 150mA	100 to 200 mA	1.7
	Regulation (%)	±5	±5	±5	±5
	Ripple (V)	<50	<50	<50	<50
Collector 3	Voltage (KV)	2 to 3	-	30 to 50% w.r.t cathode	-
	Current (mA)	300	-	100 mA to 200 mA	-
	Regulation (%)	±5	-	±5	-
	Ripple (V)	<50	-	<50	-
Modulator	Input	Grid modulator	Grid modulator	Grid modulator	Grid modulator
	Input impedance (Ω)	470			
	Pulse width (µs)	200µs	1 to 200µs	200 µs	200 µs
	PRF (kHz)	10	25	25	25
	Rise/fall time (ns)	100	100	100	100

OUR CLIENTS

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